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Docket No.: S2856.0022
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Ichiro Mase et al.

Application No.: 09/900,771 Confirmation No.: 7693

Filed: July 6, 2001 Art Unit: 1773

For: HEAT CONTROL METHOD AND HEAT CONTROLLER Examiner: Dr. K. M. Bernatz

REPLY BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

As required under § 41.41, this reply brief is filed within two months of the Examiner's Answer mailed on December 13, 2005, and is in furtherance of the Appeal Brief mailed October 4, 2005.

No fees are believed required under § 41.20(b)(2), and any required petition for extension of time for filing this brief and fees therefor, are dealt with in the accompanying TRANSMITTAL OF REPLY BRIEF.

ARGUMENT

To completely clarify the record for the Board, Applicant/appellants address the merits of the Examiner's rejection of independent claims 1 and 13, copies of which are attached in Appendix A.

I. The Requirements

The Examiner has rejected the independent claims under 35 U.S.C. § 103 as obvious based on U.S. Patent No. 6,176,453 to Long and EP 0919647 to Okamoto. As with any obviousness rejection, in order to present a prima facie case of obviousness, inter alia, the Examiner is required to show at least:

(1) a suggestion or motivation to combine these references;

(2) where the combination does not result in the claimed invention, a suggestion or motivation to modify the combination to teach or suggest all of the claim limitations; and

(3) a reasonable expectation of success.

The suggestion or motivation to modify the combination, and the reasonable expectation of success of the modification must either be shown in the cited references or in the knowledge generally available to one of ordinary skill in the art. See MPEP § 2143.

II. The Deficiencies in the Rejection

(1) The Examiner has argued that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to coat the phase change

coating of Okamoto onto the surface of the coated radiator panel taught by Long," thus combining the two references.

However, even if Long and Okamoto are combined, the resultant combination still fails to read on the claimed invention. As admitted in the Answer, "[r]egarding the requirement that the phase change substance comprise a thickness in the range of about 1 to about 30 um, neither Long nor Okamoto teach this limitation." Answer, p. 7. Accordingly, once the Examiner made the combination, he must further modify the combination to read on the claimed invention.

(2) & (3) In order to make the modification, i.e., by reducing the 200 micron thick phase change layer taught by Okamoto so that it reads on the claimed 1-30 micron phase change layer, the Examiner has not used the Long or Okamoto references to provide the suggestion or motivation to make the modification or reasonable expectation of success for the modification. Rather, the Examiner has apparently relied on the knowledge generally available to one of ordinary skill in the art.

Applicants respectfully submit that the Examiner has failed to meet the burden of showing in the prior art the suggestion or motivation to make the modification of the combination as well as a reasonable expectation of success. Only the Examiner suggests modifying this combination, and no suggestion or motivation has been cited in any of the references. The alleged suggestion or motivation is stated in the Answer, at page 8: "it would have been obvious to one of ordinary skill in the art at the time the invention was made to control the thickness of the phase change film utilized by Long [sic – disclosed by Okamoto] as modified by Okamoto [sic] to a desired range so as to obtain a coating having a balance between weight and desired heat radiation/conduction properties."

In response to the Examiner's general contention that the knowledge generally available to one skilled art provides this suggestion or motivation and reasonable expectation of success, Applicants have supplied credible evidence that the suggestion/motivation and reasonable expectation of success of such modification was not known in the art prior to the time of the invention. As stated in Mr. Okamoto's declaration, "[a]t the time of filing the EP application, our development of the SRD was such that we could only form a several hundred micron thick film." Okamoto Declaration, ¶ 3. In fact, subsequent to the filing of the EP application, Mr. Okamoto and the other inventors could not reduce the thickness of the phase change layer below 70 microns. Okamoto Declaration, ¶ 4. As Mr. Okamoto is clearly one skilled in the art, applicants respectfully submit his observations and statements regarding the state of the art, and efforts to reduce the phase change layer, should be given great deference. The Examiner's opinion that this evidence and Mr. Okamoto's testimony is unconvincing should not be given any weight at all. Unless the Examiner provides a citation to a prior art reference that teaches or suggests reducing the thickness of the phase change layer taught by Okamoto, the rejection should not be upheld.

The Examiner attempts to rebut Mr. Okamoto's Declaration by providing a list of references that disclose phase change layers having thicknesses within the desired range. However, these all of these references relate to the creation of thin film perovskite oxide layers, none of which are used to remove heat from an object. Therefore, these references clearly do not supply the suggestion/motivation to make the modification or any expectation of success, let alone a reasonable expectation of success. This is evident from the fact that none of these additional references cited teach or suggest using such phase change substance as a coating for controlling heat in an object, such as a space vehicle.

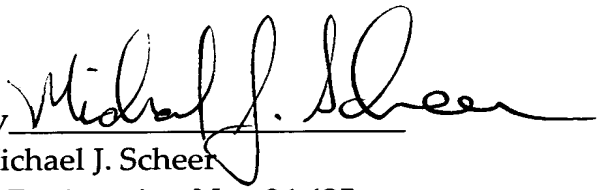
III. Conclusion

Applicants respectfully submit that the Affidavit of Mr. Okamoto submitted concurrently with the filing of an RCE in the present application successfully overcame the rejection of the claims of the present application based on the Okamoto reference EP '647.

Therefore, Applicants respectfully request that the application is granted.

Dated: February 13, 2006

Respectfully submitted,

By 

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APPENDIX A

Claims 1 and 13 Involved in the Appeal of Application Serial No. 09/900,771

1. (Previously Presented) A composite material heat controller for an object, the composite material heat controller comprising:

a base material that radiates a larger amount of heat at a high-temperature relative to that of the heat radiated at a low-temperature, the base material having a surface adapted to thermally contact a surface of said object; and

a phase-change substance overlying said base material having insulation properties at the high-temperature, metallic properties at the low-temperature, radiating a larger amount of heat at the high-temperature relative to a smaller amount of heat radiated at the low-temperature, and having a high reflectivity in the thermal infrared light region at the low-temperature;

wherein said phase-change substance comprises a thickness in the range from about one to about thirty microns.

13. (Previously Presented) A method for controlling heat in an object comprising:

providing a base material that radiates a larger amount of heat at a high-temperature relative to that of the heat radiated at a low-temperature, the base material having at least a first surface and a second surface;

attaching a phase-change substance on said first surface of said base material, said phase-changing substance having insulation properties at the high-temperature, metallic properties at the low-

temperature, radiating a larger amount of heat at the high-temperature relative to a smaller amount of heat radiated at the low-temperature, and having a high reflectivity in the thermal infrared region at the low-temperature phase and comprising a thickness in the range from about one to about thirty microns; and

attaching said second surface of said base material to said object.